



Materials and its Characterization

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Automatic Irrigation System Using Soil Moisture Sensor

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Abstract. *The automatic irrigation system is very economy and efficient. In the convectional drip irrigation system, the famer has to continously monitor the soil and weather conditions in favour of a growth of crops .In this project, moisture sensor used to sence the soil conditions and the humidity sensor DH11 used to measure the weather condition of the field. the sensed moisure state will be displayed in the mobile phone.*

1. INTRODUCTION

India being the largest freshwater user in the world, and the country's total water use being greater than any other continent, the agricultural sector is the biggest user of water, followed by the domestic sector and the industrial sector. Focus area will be parameters such as temperature and soil moisture. The system may prove to be a substitute to traditional farming method and adapting to an optimized irrigation is necessary nowadays due to the lack of world water resource. The system has a distributed wireless network of temperature and soil moisture sensor. The objectives of this project were to control the water supply to each plant automatically depending on values of temperature and soil moisture sensors. Internet or Wi-Fi module is interfaced with the system to provide data inspection. Agriculture is the spine of world's economy as well as the economy of a developing country like India. In this very moment of twenty first centuries, the technology and its advancement has become so fluent in every sector of life that it is our duty to take it forward through the infrastructure for development of agriculture as well. Agriculture also contributes a significant role to gross domestic product (GDP).

2. PROPOSED SYSTEM

The block diagram of automatic irrigation system using soil moisture sensor as shown in figure 1 In the system we use the mobile application for monitoring purpose. The BLYNK app is that application. And we use the advance level of embedded system that is ESP8266 NODEMCU MODULE and DHT11 sensor. It will not only automatically irrigate the water based on the moisture level in the soil but also send the data to BLYNK application to keep track of the land condition.

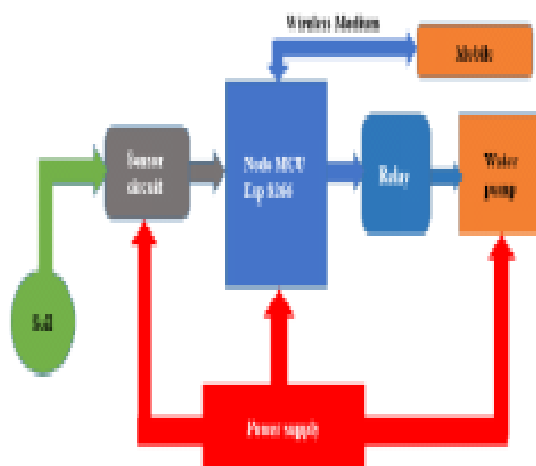


FIGURE 1. Block diagram of Proposed System

Automation offers consolation to humans through decreasing guide painting and to enhance the general

performance device without the consumer interaction. The vital Automatic Irrigation System Using Soil Moisture Sensor Anitha. A (PG- Student), S. Princee, AP, Department of EEE , VV College of Engineering . parameters for first and air temperature, humidity, sunlight, soil application. And we use the advance level first-class and productiveness of plant boom are soil soil-moisture. Information to the consumer approximately the plant fitness and boom can be furnished to the consumer through constantly tracking and recording these lawn parameters. It affords a higher expertise of the way every parameter impacts the boom of plants. Sensors capable of sensing moisture level, temperature and humidity are used. The lawn may be at once monitored and managed through the proprietor of the lawn thru their clever smart phone with the usage of IOT.The System will consist a water pump which will be used to sprinkle water on the land depending upon the land environmental condition such as Moisture, Temperature and Humidity. We are using such a crop which will require a soil moisture of about 50- 55%. So when the soil loses its moisture to less than 50% then Motor pump will turn on automatically to sprinkle the water and it will continue to sprinkle the water until the moisture goes upto 55% and after that the pump will be turned off. The sensor data will be sent to BLYNK app in defined interval of time so that it can be monitored from anywhere in the world.

3. The Flow of the System

Blynk server will checks for net connection, the NODEMCU code consists of hotspot and pass code. Remaining techniques are simply instructions dispatched from Blynk software to NODEMCU to manipulate masses the ones are related to relay package as proven in figure 2 below.

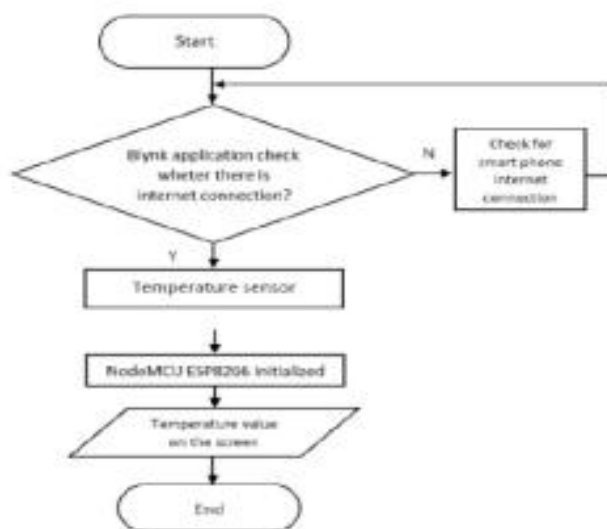


FIGURE 2. Flow chart

Advantages:

The scope of this project is

1. Monitoring of soil moisture content.
2. Automatic Control system.
3. Real time monitoring of soil.
4. Mobile based control system.
5. IOT Based platform

Disadvantages:

1. The system can only be used via internet connection.
2. The system can be used with the help of batteries on the old where AC current is not available.

4. Testing and Result

From the fig 3, this water pump needs to be fully submerged in water. The outlet pipe is kept in a field for irrigation. Similarly soil Moisture sensor is dipped in soil. As soon as you power on the device, the Blynk app will start displaying the Soil Humidity, Air Humidity, and also Air Temperature. It shows the real-Time Data. When the soil moisture content is reduced the water pumps turn on and irrigate the field until the required moisture is achieved. You can monitor the data online from any part of the world using Blynk. To do that, go to the private view of the blynk web dashboard. You can check the soil Moisture, Humidity, and Temperature as well as relay status.



FIGURE 3.

5. CONCLUSION

The main achievement of our thesis is to build a system of real time monitoring and stored data monitoring of the soil condition during irrigation. As ours have an agriculturally based economy we have to be fully focused on maximum productivity. So, water wastage and soil monitoring during irrigation has to be done at a satisfactory rate so that maximum production can be ensured. The main objective of our thesis is to design a fully automated drip irrigation system and real time soil monitoring, stored data monitoring using IOT & WSN. The system provides an efficient monitoring of moisture, humidity and temperature content of soil. The data collected by the system can be used for further analysis purpose.

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